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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,325	08/18/2003	Stanley L. Lehmann	LAA-106-US	2874

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EXAMINER	
STAICOVICI, STEFAN	
ART UNIT	**PAPER NUMBER**
1732	

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/642,325	LEHMANN ET AL.	
	Examiner	Art Unit	
	Stefan Staicovici	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) *7-16,24-32,39,41,42,44,45,47,48,50 and 51* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,17-23,33-38,40,43,46 and 49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/18/03;10/06/03;*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *IDS: 2/4/05;3/28/05*.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-6, 17-23, 33-38, 40, 43, 46 and 49 in the reply filed on January 10, 2006 is acknowledged. The traversal is on the ground(s) that "no additional effort would be required to search ...all the claims in one application."

This is not found persuasive because as shown in the restriction requirement mailed December 12, 2005, the three groups of inventions are classified in different classes and subclasses, hence requiring a search in multiple class/subclass combinations and as such, creating an undue burden.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 48 (second occurrence) has been renumbered 49. Claims 1-51 are pending in the instant application.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 3-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Murai *et al.* (US 2004/0185733 A1).

Murai *et al.* (US 2004/0185733 A1) teach the claimed resin transfer molding process for making a molded product including, providing a resin having an ABS and a benzoxazine component (heat curable composition), placing a reinforcing fiber woven fabric in a mold, injecting (elevated pressure) said resin into said mold, heating said mold to a first temperature such as to reduce the viscosity of the resin and allow wetting of said reinforcing fiber woven fabric, increasing the temperature to a second, higher temperature such as to cure said resin and form said molded product (see paragraphs [0073], [0077]-[0079] and [0099]).

Regarding claim 3, Murai *et al.* (US 2004/0185733 A1) teach a resin having an ABS, a benzoxazine, a phenolic and an epoxy component (heat curable composition) (see paragraphs [0073]). Further, Murai *et al.* (US 2004/0185733 A1) teach a hardening agent (curing agent) (see paragraph [007]).

In regard to claim 4, Murai *et al.* (US 2004/0185733 A1) teach a resin composition having a viscosity of less than 500 mPa·sec (centipoises)

Specifically regarding claims 5 and 6, Murai *et al.* (US 2004/0185733 A1) teach a curing time of two hours and a carbon fiber fabric (see paragraph [0099]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murai *et al.* (US 2004/0185733 A1) in view of Jang *et al.* (Journal 1998).

Murai *et al.* (US 2004/0185733 A1) teach the basic claimed process as described above.

Regarding claim 2, although Murai *et al.* (US 2004/0185733 A1) teach a resin having an ABS component, Murai *et al.* (US 2004/0185733 A1) do not teach an ABS toughening agent having secondary amine terminal groups. However, the use of an ABS toughening agent having secondary amine terminal groups is well known as evidenced by Jang *et al.* (Journal 1998) who teach the use of an ABS toughening agent having secondary amine terminal groups in combination with polybenzoxazine (see Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have provided an ABS toughening agent having secondary amine terminal groups as taught by Jang *et al.* (Journal 1998) in the composition in the process of

Murai *et al.* (US 2004/0185733 A1) because, Jang *et al.* (Journal 1998) specifically teach that the mechanical properties of the resulting molded article increase, hence providing for an improved product and also because of its known status.

7. Claims 17-18, 20-23, 33 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murai *et al.* (US 2004/0185733 A1) in view of Applicants' Admitted Prior Art (APA).

Murai *et al.* (US 2004/0185733 A1) teach the basic claimed resin transfer molding process for making a molded product including, providing a resin having an ABS and a benzoxazine component (heat curable composition), placing a reinforcing fiber woven fabric in a mold, injecting (elevated pressure) said resin into said mold, heating said mold to a first temperature such as to reduce the viscosity of the resin and allow wetting of said reinforcing fiber woven fabric, increasing the temperature to a second, higher temperature such as to cure said resin and form said molded product (see paragraphs [0073], [0077]-[0079] and [0099]).

Regarding claim 17, although Murai *et al.* (US 2004/0185733 A1) teach a low-pressure injection method (see paragraph [0077]), Murai *et al.* (US 2004/0185733 A1) do not specifically teach a vacuum assisted molding process. APA teaches that it is known in vacuum assisted molding process to use vacuum to infuse the resin (see paragraph [0006] of the original disclosure), hence a low injection process as suggested by Murai *et al.* (US 2004/0185733 A1). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a vacuum as taught by APA in the process of Murai *et al.* (US 2004/0185733 A1) because of known advantages such as reduced porosity, increased properties of the resulting molded product

and also because Murai *et al.* (US 2004/0185733 A1) suggests a vacuum assisted molding process by specifically teaching a low-pressure injection method (see paragraph [0077]).

In regard to claim 18, although Murai *et al.* (US 2004/0185733 A1) in view of APA does not teach a dispersing (resin distribution) medium, the use of a dispersing medium is well known. It would have been obvious for one of ordinary skill in the art to have provided a dispersing medium in the process of Murai *et al.* (US 2004/0185733 A1) in view of APA due to a variety of known advantages such as improved uniform resin flow, reduced resin rich or poor areas and improved properties due to a more uniform structure.

Regarding claims 20 and 35, Murai *et al.* (US 2004/0185733 A1) teach a resin having an ABS, a benzoxazine, a phenolic and an epoxy component (heat curable composition) (see paragraphs [0073]). Further, Murai *et al.* (US 2004/0185733 A1) teach a hardening agent (curing agent) (see paragraph [007]).

In regard to claims 21 and 36, Murai *et al.* (US 2004/0185733 A1) teach a resin composition having a viscosity of less than 500 mPa·sec (centipoises)

Specifically regarding claims 22-23 and 37-38, Murai *et al.* (US 2004/0185733 A1) teach a curing time of two hours and a carbon fiber fabric (see paragraph [0099]).

Regarding claim 33, although Murai *et al.* (US 2004/0185733 A1) teach a low-pressure injection method (see paragraph [0077]), Murai *et al.* (US 2004/0185733 A1) do not specifically teach a film infusion molding process. APA teaches that resin film infusion is well known as a resin transfer molding process (see paragraphs [0007]-[0009] of the original disclosure), hence a low injection process as suggested by Murai *et al.* (US 2004/0185733 A1). Therefore, it would

have been obvious for one of ordinary skill in the art to have provided a resin film as taught by APA in the process of Murai *et al.* (US 2004/0185733 A1) because of known advantages that a resin film infusion process provides such as increased resin flow control and the ability to mold large structures and also because Murai *et al.* (US 2004/0185733 A1) suggests a resin infusion molding process by specifically teaching a low-pressure injection method (see paragraph [0077]). Further, it is noted that Murai *et al.* (US 2004/0185733 A1) teach a wide variety of equivalent injection/infusion molding process (see paragraph [0096]).

8. Claims 19 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murai *et al.* (US 2004/0185733 A1) in view of Applicants' Admitted Prior Art (APA) and in further view of Jang *et al.* (Journal 1998).

Murai *et al.* (US 2004/0185733 A1) in view of APA teach the basic claimed process as described above.

Regarding claims 19 and 34, although Murai *et al.* (US 2004/0185733 A1) in view of APA teach a resin having an ABS component, Murai *et al.* (US 2004/0185733 A1) in view of APA do not teach an ABS toughening agent having secondary amine terminal groups. However, the use of an ABS toughening agent having secondary amine terminal groups is well known as evidenced by Jang *et al.* (Journal 1998) who teach the use of an ABS toughening agent having secondary amine terminal groups in combination with polybenzoxazine (see Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have provided an ABS toughening agent having secondary amine terminal groups as taught by Jang *et al.* (Journal 1998) in the composition in the process of Murai *et al.* (US 2004/0185733 A1) in view of APA

because, Jang *et al.* (Journal 1998) specifically teach that the mechanical properties of the resulting molded article increase, hence providing for an improved product and also because of its known status.

9. Claim 40, 43, 46 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murai *et al.* (US 2004/0185733 A1) in view of Musa (US Patent No. 6,620,905 B1).

Murai *et al.* (US 2004/0185733 A1) teach the basic claimed process as described above.

Regarding claims 40, 43, 46 and 49, although Murai *et al.* (US 2004/0185733 A1) teach a benzoxazine based resin, Murai *et al.* (US 2004/0185733 A1) does not specifically teach the claimed chemical compound. Musa ('905) teach a potting (molding) curable benzoxazine composition having the claimed structure (see col. 1, line 38 through col. 2, line 65). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a curable benzoxazine composition having the structure of Musa ('905) in the process of Murai *et al.* (US 2004/0185733 A1) because, Murai *et al.* (US 2004/0185733 A1) teach that such curable benzoxazine compositions provide for improved characteristics, whereas Murai *et al.* (US 2004/0185733 A1) teach that such resins provide for improved flame and heat resistance, hen ceproviding for an improved product and also because Murai *et al.* (US 2004/0185733 A1) teach a benzoxazine based resin, hence suggesting the structure of Musa ('905).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Colaianni, can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD

Stefan Staicovici 2/2/06

Primary Examiner

AU 1732

February 2, 2006